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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/665,546

09/22/2003

Hiroshi Taira

117247

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25944

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04/20/2006

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EXAMINER

MRUK, GEOFFREY S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

28

Office Action Summary	Application No.		Applicant(s)	
	10/665,546		TAIRA, HIROSHI	
	Examiner		Art Unit	
	Geoffrey Mruk		2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hubbard (US 4,703,333) in view of DeYoung (US 4,768,266).

With respect to claim 1, Hubbard discloses an ink-jet head (Fig. 10, Column 1, lines 14-24), comprising:

- a passage portion (Fig. 9, elements 84, 86, 88, 90) in which a plurality of ink ejecting nozzles (Fig. 9, element 112) are formed, the passage portion including a plurality of individual ink passages (Fig. 9, element 116) running to the nozzles through pressure chambers (Fig. 9, element 118);
- a spaced portion (Fig. 9, element 92) spaced apart from and facing the passage portion;
- a driving portion (Fig. 9, element 96) bonded to a surface of the passage portion facing the spaced portion, for imparting squirting energy to ink in the pressure chambers (Column 7, lines 55-60);

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- a power supply member (Fig. 9, element 98) electrically connected (Fig. 9, element 100) with the driving portion for supplying driving signals to the driving portion (Column 7, lines 23-26);
- a protrusion (Fig. 9, element 102) provided in at least either of the surface of the spaced portion (Fig. 9, element 92) facing the passage portion (Fig. 9, elements 84, 86, 88, 90) and the surface of the passage portion facing the spaced portion.

With respect to claim 2, Hubbard discloses a bonded portion (Column 7, lines 19-23) bonded to the passage portion (Fig. 9, elements 84, 86, 88, 90) while supporting the spaced portion (Fig. 9, element 92) to maintain a distance between the spaced portion and the passage portion, wherein the protrusion (Fig. 9, element 102) is provided opposite to the bonded portion with respect to the driving portion (Fig. 9, element 96).

With respect to claim 3, Hubbard discloses the protrusion (Fig. 9, element 102) is provided on the spaced portion (Fig. 9, element 92).

With respect to claim 4, Hubbard discloses the protrusion (Fig. 9, element 102) faces the passage portion (Fig. 9, element 90) and has such a height that a front end of the protrusion is positioned at a level beyond a level of a surface of the driving portion (Fig. 9, element 96) facing the spaced portion (Fig. 9, element 92).

With respect to claim 5, Hubbard discloses the protrusion (Fig. 9, element 102) does not face (i.e. elements 94 and 98 intervene) the passage portion (Fig. 9, elements 84, 86, 88, 90) and has such a height that a front end of the protrusion is positioned at a level beyond a level of the surface of the passage portion facing the spaced portion (Fig. 9, element 92).

With respect to claim 6, Hubbard discloses the power supply member (Fig. 9, element 98) is in abutment with at least either of the protrusion (Fig. 9, element 102) and the passage portion (Fig. 9, element 90).

With respect to claim 7, Hubbard discloses the power supply member (Fig. 9, element 98) is in abutment with both of the protrusion (Fig. 9, element 102) and the passage portion (Fig. 9, elements 84, 86, 88, 90).

With respect to claim 8, Hubbard discloses the plurality of pressure chambers (Fig. 9, element 118) are arrayed in matrix along a bonded surface bonded to the driving portion (Fig. 9, element 96; Column 1, lines 14-24),

- the driving portion has piezoelectric sheets (Column 1, line 51, i.e. US 3,107,630) extending across the plurality of pressure chambers (Fig. 9, element 118)
- and a plurality of individual electrodes (Column 1, line 51, i.e. US 3,107,630) arranged on the piezoelectric sheets to correspond to the respective pressure chambers and is bonded (Column 1, lines 14-24) to the passage portion (Fig. 9, elements 84, 86, 88, 90) and
- the power supply member (Fig. 9, element 98) supplies driving signals to the respective individual electrodes of the driving portion (Column 7, lines 23-26).

With respect to claim 9, Hubbard discloses a whole area of the driving portion (Fig. 9, element 96) faces the spaced portion (Fig. 9, element 92).

With respect to claim 10, Hubbard discloses the spaced portion (Fig. 9, element 92) includes an ink reservoir (Fig. 9, elements 106) in which ink is stored and from which

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the stored ink is fed to the individual ink passages (Fig. 9, element 116) of the passage portion (Fig. 9, elements 84, 86, 88, 90).

With respect to claim 11, Hubbard discloses an ink-jet head (Fig. 10, Column 1, lines 14-24), comprising:

- a passage unit (Fig. 9, elements 84, 86, 88, 90) in which a plurality of ink ejecting nozzles (Fig. 9, element 112) are formed, the passage unit including a plurality of individual ink passages (Fig. 9, element 116) running to the nozzles through pressure chambers (Fig. 9, element 118);
- a reservoir unit (Fig. 9, element 106) including an ink reservoir in which ink is stored and from which the stored ink is fed to the passage unit;
- an actuator unit (Fig. 9, element 96) bonded to the passage unit for imparting squirting energy to the ink in the pressure chambers; and
- a power supply member (Fig. 9, element 98) electrically connected with the actuator unit for supplying driving signals to the actuator unit (Column 7, lines 23-26);
- wherein the reservoir unit (Fig. 9, element 106) has a bonded surface (Column 7, lines 19-23) bonded to the passage unit (Fig. 9, elements 84, 86, 88, 90) and a spaced surface (Fig. 10, element 104) extended across and spaced apart from the actuator unit,
- a protrusion (Fig. 9, element 102) is provided in an area of the spaced surface of the reservoir unit (Fig. 9, elements 92, 106), the area is opposite to the bonded surface with respect to an area facing the actuator unit, and

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- the power supply member (Fig. 9, element 98) is in abutment with both of the protrusion and the passage unit.

With respect to claim 12, Hubbard discloses a width of the passage unit (Fig. 9, elements 84, 86, 88, 90) is not more than a width of the reservoir unit (Fig. 9, elements 92, 106).

Hubbard discloses "The manifold (92) is bonded to an upper surface of the diaphragm plate (90) and is provided with an extensive window 94 sized to protectively encompass transducers 96, preferably made of a piezo-ceramic material" (Column 7, lines 19-23).

However, with respect to claims 1 and 11, Hubbard fails to disclose

- a sealing member disposed adjacent to the protrusion for sealing a space between the passage portion and the spaced portion and
- a sealing member for sealing a space between the passage unit and the reservoir unit is disposed at the abutment portion.

DeYoung discloses an ink jet printer transducer (Column 4, lines 29-44) array with a sealing member (Fig. 6, elements 28, 34).

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the sealing member of DeYoung in the ink jet print head of Hubbard. The motivation for doing so would have been the "configuration results in effective electrical shielding, and hence minimizes electrical cross-talk" (Column 5, lines 51-59).

Response to Arguments

Applicant's arguments filed 5 April 2006 have been fully considered but they are not persuasive.

1. The applicant's argument that "First, the alleged spaced portion of Hubbard is not spaced apart from and facing the passage" is not persuasive. However, as stated in the final action rejection, Hubbard discloses, "These plates are all bonded together. This may be accomplished by diffusion bonding, a nickel braze, or vacuum bonding, and brazing alloys such as nickel phosphorous or silver may be used. A manifold 92 is preferably composed of a plastic material such as "RYTON" for reasons including ink compatibility, stability, moldability, and low cost. The manifold is bonded to an upper surface of the diaphragm plate and is provided with an extensive window 94 sized to protectively encompass transducers 96, preferably made of a piezoceramic material" (Column 7, lines 12-23). Since a material is used in the bonding of the printhead plates, Hubbard meets the claimed limitations.

2. The applicant's argument that "Second, the alleged driving portion (Fig. 7, transducer 96) of Hubbard does not correspond to the driving portion as recited claim I" is not persuasive. However, as stated in the final action rejection, Figure 7, elements 92 and 96 in the ink jet printhead of Hubbard meets the claimed limitations.

3. The applicant's argument that "Third, the alleged protrusion of Hubbard does not correspond to the protrusion as recited in claims 1 and 11" is not persuasive. However, as stated in the final action rejection, Figure 7, element 102 in the ink jet printhead of Hubbard meets the claimed limitations.

4. The applicant's argument that "Fourth, Hubbard's reservoir unit does not correspond to Applicant's reservoir unit as recited in claim 11 because Hubbard's reservoir unit is connected to fill tubes and is not bonded to the passage unit" is not persuasive. However, as stated in the final action rejection, Figure 7, elements 92 and 106 in the ink jet printhead of Hubbard meets the claimed limitations.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM
4/13/2006

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SUPERVISORY PATENT EXAMINER